Before addressing the merits of this rejection, it is instructive to review the subject matter of the present application as claimed. The present invention, in its broadest embodiment, such as in claims 1, 31and 43 relates to a water thin emulsion comprising a non-phospholipid, non-ethoxylated pseudoemulsifier system, the system having a chemical composition with at least one hydrophobic moiety and at least one polar moiety, the size shape and /or planar arrangement of the hydrophobic and polar moieties being asymmetrical with respect to each other. The pseudoemulsifiers are compounds, or a group of compounds, which have not traditionally been considered "emulsifiers" because on their own they were not considered to be capable of maintaining emulsion stability. Surprisingly, it has been found that compounds of this type, having the specified arrangement of hydrophobic and polar moieties, are capable of maintaining stability of water-thin emulsions at a very low level, frequently less than 1%.

A careful reading of Franco will show that it does not in any way teach or suggest Applicants' invention as claimed. As noted above, a particularly important feature of the present invention is the chemical identity and structure of the pseudoemulsifier. Applicants are not claiming just any emulsifier, but rather a very specific system, and needless to say, the description of Applicants' pseudoemulsifiers is not descriptive of just any emulsifiers. Franco does not disclose any type of system, let alone a pseudoemulsifier system, with the structure claimed in the present claims

In the rejection, the Examiner specifically notes that the claims are anticipated by the abstract, at column 1, line 66, column 4, line 21, and column 2, lines 29-52. Applicants have carefully read through each of the cited passages, as well as the document as a whole, and have failed to find any reference whatsoever to a pseudoemulsifier system having the structure claimed in the present claims. Indeed, while it may be the case that the disclosure may have contemplated that other emulsifiers can be used, the fact remains that no other type of emulsifier, other than ethoxylated emulsifiers, is disclosed in Franco, and it is unequivocally the case that there is no disclosure of a pseudoemulsifier system having a chemical composition with at least one hydrophobic moiety and at least one polar moiety, the size shape and /or planar arrangement of the hydrophobic and polar moieties being asymmetrical with respect to each other. The fact that the Examiner reads the Franco disclosure as encompassing any type of emulsifier at all does not constitute a disclosure of any particular type of emulsifier, let alone the pseudoemulsifier of the present invention. The law on anticipation is quite clear: each and every element of the claimed invention must be found within a single prior art reference. *In re Paulsen*, 31 USPQ2d 1671 (Fed.Cir. 1994). In the utter absence of any disclosure of the present type of pseudoemulsifier

system, there is clearly no anticipation of the present claims. If the Examiner persists in this position, Applicants respectfully request the Examiner to clearly show where in the Franco document is disclosed a chemical composition with at least one hydrophobic moiety and at least one polar moiety, the size shape and /or planar arrangement of the hydrophobic and polar moieties being asymmetrical with respect to each other.

With respect to claim 4, although it is clear that it cannot be anticipated, since claim 1 on which it depends is not anticipated, it is further worth noting that in no case does Franco disclose any formulation which if free of both phospholipids and nonethoxylated emulsifiers. Every single formulation contains at least one, and in some cases more, ethoxylated emulsifiers. Therefore, separately from claim 1, claim 4 is clearly not anticipated by Franco et al.

As to obviousness, this rejection is also insupportable. Whether or not Franco actually states that nonethoxylated emulsifiers are not essential (and it is arguable as to what the disclosure actually states on this point), it is unquestionably the case the disclosure does not disclose or suggest the pseudoemulsifier system of the present invention. Indeed, there is no suggestion of the use of anything but standard emulsifiers, which the present pseudoemulsifiers unequivocally are not. Therefore, in view of the disclosure of only standard emulsifiers to stabilize their system, one cannot read the Franco document as suggesting a pseudoemulsifier system of the type claimed in the present invention.

With regard to the assertion that with respect to claim 6, it would have been obvious to lower the concentration of glycerol monoester to 0.5% in view of "patentees' suggestion" in the sentence bridging columns 4 and 5, this is a spurious argument. Applicants are actually not clear on how the reduction of glycerol monoester is relevant to the claim in question, but nonetheless the Examiner's observation does not support a holding of obviousness of claim 6 or any other claim. First, a glycerol monoester, such as glyceryl stearate, on its own does not constitute a pseudoemulsifier of the present invention, and would not ordinarily, at any concentration, be expected to maintain emulsion stability at any reasonable level, let alone at the .5% level. It must be noted that, in the one case in which glyceryl monostearate is mentioned in Franco, it is used in an amount substantially over 0.5%, but more importantly, is combined with several ethoxylated emulsifiers. In contrast, in all cases in the present invention, the glycerol stearate would have to be combined with other nonethoxylated, pseudoemulsifier components in order to achieve the pseudoemulsifier system of the present invention. Thus, even if the passage cited could be read as suggesting the reduction of glycerol monoesters to 0.5%, it would not suggest the pseudoemulsifier system of the invention, nor on that teaching alone, achieve a stable emulsion.

For all the foregoing reasons, it is respectfully requested that the rejection of claims 1, 4-6, 31 and 43 be withdrawn.

Claims 2, 3, 7, 8, 10-12, 19-30, 32, 33 and 38 have been rejected under 35 USC §103 as being unpatentable over Franco et al. in view of WO 91/01970 (Holmes) or George et al. The pertinent portions of Franco are said to be those noted in the previous rejection. With respect to the secondary references, their pertinence is stated as follows:

> While Franco may not specifically disclose emulsions in which the emulsifier is one or more 2-amidocarbonyl-benzoic acid compounds, it would have been obvious to one skilled in the art at the time applicants' invention was made to apply the homogenizing process of Franco et al. to emulsions containing such emulsifier(s) of Holmes or George et al. to obtain stable water-thin emulsions having the advantage(s) taught by Franco et al.... As to claims 10-12 and 30, it would further have been obvious to one skilled in the art at the time applicants' invention was made to include in the resulting emulsions a gum...to adjust viscosity in view of the suggestion of Holmes.

Applicants respectfully traverse this rejection. First, with regard to the teachings of Holmes or George, it is noted that the compounds in question are specifically not referred to as emulsifiers, but rather are stated as being only "rheological modifiers" or "emulsion stabilizers". In no case are they said to be able to serve as emulsifiers of any type of emulsion, let alone a water thin emulsion as required by the present claims. In fact, it is specifically noted in the George reference that these compounds must be combined with either or both of a low HLB emulsifier and a polymeric emulsifier(George, p. 40) in order to achieve the desired result. Therefore, contrary to the Examiner's assertion, it would not have been obvious to prepare any type of emulsion in which this type of compound serves as the primary emulsifying agent, when in fact the compound is not known to have emulsifying properties in and of itself. Franco's high pressure homogenization is applied to compositions containing standard, traditional emulsifiers that are capable of creating and holding an emulsion; it would not thus be obvious to substitute the stearyl amidobenzoic acid compounds of George or Holmes, for the true emulsifiers of Franco, when the George/Holmes compounds are understood in the art, as expressly stated in George, to be incapable of acting as emulsifiers on their own. There is thus nothing in the combination of these references that would suggest that a pseudoemulsifier, having the defined structure stated in claim 2, would be capable of acting as an emulsifier in a water-thin emulsion. With respect to claim 3, and any claims dependent thereon, it is not understood where in the documents cited would be suggested a pseudoemulsifier system that is a mixture of compounds comprising at least two hydrophobic moieties, at least two polar moieties, or at least two of both hydrophobic and polar moieties. The Examiner has not addressed the specifically defined elements of claim 3, and indeed, if the references relied upon are read carefully, it is quite clear that there is

no teaching whatsoever that would suggest such a system. The same is true with respect to claims 19-29; there has been no argument or showing presented at all as to how the elements of these claims are rendered obvious by the teachings of Franco combined with Holmes and/or George. These claims relate specifically to aspects of the identity of the various hydrophobic and polar moieties of the pseudoemulsifier system. There is nothing in any of these references, alone or combined, which suggests a water-thin emulsion containing a pseudoemulsifier emulsion system; as noted above, all the references cited disclose emulsions which rely on the use of traditional emulsifiers, not a pseudoemulsifier. Thus, it cannot be obvious to make an emulsion of any kind relying on a pseudoemulsifier system, let alone one with the specifically identified characteristics of the present claims, or one in which the system is comprised of several compounds representing the different chemical entities. If the Examiner has found such teachings in these documents, Applicants respectfully request that such teachings be expressly pointed out. It is the obligation of the PTO to establish a case of *prima facie* obviousness, which requires, *inter alia*, that the prior art reference(s) teach or suggest all claim limitations. *In re Royka,* 180 USPQ 580 (CCPA 1974). The PTO's obligation in this regard has not been met here, and in the absence of the pertinent showings, withdrawal of the rejection of these claims is respectfully requested.

Claim 9 has been rejected under 35 USC §103(a) as being obvious over Franco et al. in view of Carrera et al. US Patent No. 5,264,363. Franco is cited for the points already noted. It is further stated that:

> While Franco et al. may not specifically disclose emulsions in which the emulsifier is surfactin, it would have been obvious to one skilled in the art at the time applicants' invention was made to apply the homogenizing process of Franco et al to emulsions containing the surfactin of Carrera to obtain stable, water-thin emulsions having the advantage(s) taught by Franco et al.

Again, with respect to this rejection, the Examiner has failed to provide any basis whatsoever to support this rejection. The statement of rejection simply says it would be obvious to do so, with no analysis of the reference, or even a conclusory statement as to why it would be obvious. On this basis alone, since there is no supporting arguments at all and thus no *prima facie* case of obviousness made, the rejection must be withdrawn. Moreover, if one reads the Carrera document carefully, it would be readily seen that it would not have been obvious to use surfactin in the emulsions of Franco. Surfactin is not known as an emulsifier, but rather simply as a surfactant, and therefore, would not be a recognized substitute for the traditional emulsifiers of Franco. The disclosure of Carrera does not suggest, nor would one skilled in the art understand from its disclosure, that surfactin would be able to emulsify and hold together the water thin emulsions of Franco. Surfactants and emulsifiers are not necessarily interchangeable, and the fact that a material

can effect the surface tension of water does not in any way suggest that it has the property of emulsifier: an example of this is salt, which clearly is a surface active agent, but is not an emulsifier. Therefore, the person of ordinary skill, on reading Carrera, would not be led to substitute the surfactin molecule in a situation in which a true emulsifier is needed. Thus, the rejection of claim 9, on both a legal and technical basis, must be withdrawn.

Claims 13, 14, 31-33 and 38 have been rejected under 35 USC §103(a) as being unpatentable over Franco et al. in view of Nagahama et al. US Patent No. 6,140,375. Franco is cited as above, and it is further stated that it would have been obvious to apply the homogenization process of Franco to the emulsions containing the surfactant(s) of Nagahama to obtain stable water-thin emulsions. This rejection fails, as did the previous one, on both legal and technical bases. First, again, the Examiner has failed to provide any reasoning or technical basis for asserting it would be obvious to combine these two references, or why it is to be assumed, with no supporting basis whatsoever, that such an emulsion would be stable. Therefore, the Examiner has failed to meet the burden of establishing *prima facie* obviousness, and the rejection must be withdrawn on this basis alone. However, the rejection fails on a technical basis as well. Even if one directly combined the teachings of Nagahama and Franco, one would simply not arrive at the compositions claimed in the rejected claims. Attention is drawn to the subject matter of claims 13 and 14, which expressly require, by virtue of their dependence on claim 3, and ultimately claim 1, that the nonethoxylated pseudoemulsifier system comprise a mixture of compounds comprising at least two hydrophobic moieties, at least two polar moieties, or at least two of both hydrophobic or polar moieties, wherein the size, shape and/or planar arrangement of the hydrophobic and polar moieties are asymmetrical with respect to each other. Where, even in the combination of the teachings of the two references, does the Examiner find the required components of Applicants' claims? The simple answer is that they are just not there. The glycerol myristates and stearates or sucrose stearates of Carrera constitute but one component of the necessary mixture of chemically and structurally distinct compounds; as shown clearly above in the discussion of Franco, this reference does not disclose any of the necessary components of the claimed pseudoemulsifier system. Similarly, claims 31-33 and 38 require at least one hydrophobic moiety and one polar moiety having asymmetrical arrangement with respect to each other. It is not even clear why Carrera is relevant to these claims, since none relates specifically to glycerol fatty esters or sucrose esters. Again, Applicants cannot find any disclosure, and the Examiner has certainly not pointed out any, in either of these references, that shows or even remotely suggests, all the necessary components of Applicants pseudoemulsifier system. Thus, even if the argument that it would be obvious to

combine these references were not a spurious one, the end result would not yield the subject matter of the rejected claims. The rejection therefore should be withdrawn.

The same argument applies exactly to the rejection of claims 15 and 16 based on Franco and Nagahama in view of Gabby, US Patent No. 3,936,391. As already shown above, there is no basis for combining Franco and Nagahama, and even if combined, they would not achieve the subject matter of the claims in question. Gabby adds nothing further to this combination, in that even if all the teachings of these three references were combined, the subject matter of claims 15 and 16 would not be obtained. There is simply no teaching in the combination of references that would provide a disclosure of the necessary individual components of claim 3, from which these claims depend and which components are incorporated in these claims by reference. In the complete absence in the prior art of a teaching of even one of the necessary components, the rejection cannot be sustained. See *Royka, supra.* Thus, this rejection must also be withdrawn.

Claims 34, 35, 39 and 42 have been rejected under 35 USC §103(a) as being unpatentable over Franco et al. in view of Thill US Patent No.5,178,871. Franco is cited as above. It is further stated that while Franco et al. do not disclose multiple emulsions, it would have been obvious to do so in view of the disclosure of Thill when the ultimate intended use make a dual emulsion necessary or desirable.

Again, Applicants must call attention to the fact that neither of the references, alone or in combination teach or suggest a pseudoemulsifier composition containing the components required by claims 1 and 6, upon which all these claims depend. Absent this teaching alone, the rejection of these claims cannot be maintained. In addition, however, the rationale provided for the rejection is also insupportable. The Examiner statement appears to suggest that simply because a particular result is necessary or desirable, the result must therefore be obvious. Clearly, as those who continue to work in seeking cures for cancer and HIV can attest, this is not the case. In any event, such a position cannot be supported legally; this is at best an "obvious to try" situation, which is well-established as not constituting a valid basis for an obviousness rejection. *In re Eli Lilly Co.*, 14 USPQ 2d 1741, 1743(Fed. Cir. 1990); *In re O'Farrell*, 7 USPQ 2d 1673(Fed.Cir. 1988); *In re Dow Chemical Co.*, 5 USPQ 1529(Fed. Cir. 1988); *In re Vaeck*, 20 USPQ2d 1438(Fed. Cir. 1991). As the Examiner must certainly be aware, the preparation of a simple stable emulsion is difficult enough; the preparation of a multiple emulsion is therefore even more complex and uncertain. The fact that Thill created a multiple emulsion based on their specific set of components does not even remotely suggest, or predict success, in making a multiple emulsion from a different set of components. A careful review of the components used by Thill show that they are not relevant to the present pseudoemulsifier composition: all the emulsifiers are standard emulsifiers, at least one

emulsifier is ethoxylated, and the emulsifiers are used in an amount substantially greater than 1%. Therefore, there would be no reasonable expectation of success, based on Thill, that one could prepare a multiple emulsion using the water-thin emulsions containing the pseudoemulsifiers of the present invention, particularly one with no greater than 1% of traditional emulsifiers. For all the foregoing reasons, then, the rejection of claims 34, 35, 39, and 42 should be reconsidered and withdrawn.

Claims 36, 37, 40 and 41 have been rejected under 35 USC §103(a) as being unpatentable over Franco et al. in view of Holmes or George et al. and further in view of Thill. The basis for the rejection is substantially as stated above with regard to the combination of Franco et al. in view of Holmes and George, with the further statement that it would be obvious to make a multiple emulsion combining these references with Thill when a multiple emulsion is necessary or desirable. Applicants have shown that there is no technical or legal basis for combining Franco and Holmes/George, so on this basis alone the rejection cannot be sustained. As noted directly above, however, with respect to Thill, even if the combination of Franco and Holmes/George were valid, the creation of a multiple emulsion, especially using a pseudoemulsifier system, is not a routine matter, particularly if it is to contain no greater than 1% traditional emulsifier. The rejection therefore is insupportable, and withdrawal is respectfully requested.

Rejection under 35 USC §112

Claims 7 and 12 have been rejected under 35 USC §112 as being indefinite for failing to particularly point out and distinctly claim the invention. In particular, claim 7 is objected to for the use of the phrase "for example" and "derivatives thereof". Claim 12 is said to recite an improper Markush group because of reciting "or" instead of "and" at line 2.

Claim 7 has been amended herein to delete the phrase "for example" and "derivatives thereof", and to list basic amino acids separately as a meaning of M+, rather than as a derivative of NH4.

Claim 12 has been amended to change "or" to "and". In view of the amendments herein, withdrawal of the rejection of claims 7 and 12 is respectfully requested.

Miscellaneous

In response to the Examiner's objection, the specification on page 2 has been amended to recite "Drawings" instead of "Figures". The "Summary of the Invention" section of the specification has also been amended to correct a typographical error which appears to have dropped some lines from the text. That this is an error is clear from a reading of the first sentence, which

without the insert is incomplete, and further the inserted material merely mimics the subject matter of claims 1 and 2, so does not constitute new matter.

CONCLUSION

Applicants gratefully acknowledge the Examiner's indication of allowable subject matter in claims 17 and 18. However, it is believed that the foregoing arguments clearly show that all the claims of the application should be recognized as allowable. Since the present claims are believed to be in condition for allowance, prompt issuance of a Notice of Allowance is respectfully solicited. The Examiner is encouraged to contact the undersigned by telephone if it is believed that discussion will resolve any outstanding issues.

Respectfully submitted,

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COPY OF INSERT IN THE SPECIFICATION ON PAGE 2, MARKED TO SHOW CHANGES FROM THE ORIGINAL

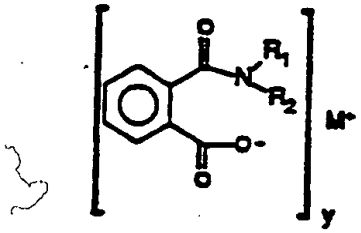
--Summary of the Invention

The present invention relates to water-thin emulsions prepared by high pressure homogenization, in the presence of a non-phospholipid, non-ethoxylated "pseudoemulsifier" having a chemical composition comprising at least one hydrophobic moiety, and at least one polar moiety, the size and/or the planar arrangement of the hydrophobic and polar moieties being asymmetrical with respect to each other. Preferably, the pseudoemulsifier contains at least two of one or of both of the types of moieties. Although not ordinarily effective for use alone in maintaining stability of emulsions, the pseudoemulsifiers have been shown to be highly effective in maintaining the stability of these water-thin emulsion, even at very low levels, i.e., less than 1%, and in addition are very mild and non-irritating to the skin. The water-thin emulsions find a variety of uses as a base for both cosmetic and pharmaceutical products. The invention also provides a method for producing a water-thin emulsion, comprising mixing oil and water phases in the presence of the pseudoemulsifier, and subjecting the mixture to high pressure homogenization.

Brief Description of the [Figures]Drawings--

COPIES OF AMENDED CLAIMS MARKED TO SHOW CHANGES

7(amended). The emulsion of claim 1 in which the pseudoemulsifier is a 2-amidocarbonyl-benzoic acid compound having the formula (I)



wherein R_1 and R_2 are independently H or $(CH_2)_nCH_3$, wherein n=8-22, provided that at least one of R_1 and R_2 is H, wherein M^+ is a cation selected from the group consisting of H, Na, K, NH_4, [and derivatives thereof(for example, basic amino acids)] <u>basic amino acids</u>, Ba, Ca, Mg, Al, Ti, and Zr, and y is an integer of a value satisfying the valency of M^+.

12(amended). The emulsion of claim 11 in which the polymer is selected from the group consisting of disaccharides, polysaccharides, [or]<u>and</u> a predominantly hydrophilic peptide or protein.